



US006613319B2

(12) **United States Patent**
Leiden(10) **Patent No.: US 6,613,319 B2**
(45) **Date of Patent: *Sep. 2, 2003**(54) **LONG-TERM EXPRESSION OF
ERYTHROPOIETIN AND GROWTH
HORMONE BY TRANSFORMING MUSCLE
CELLS**(75) **Inventor: Jeffrey M. Leiden, Chicago, IL (US)**(73) **Assignee: Arch Development Corporation,
Chicago, IL (US)**(*) **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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A61K 48/00; A61K 31/70; C12N 15/63(52) **U.S. Cl.** 424/93.2; 424/93.1; 424/93.21;
424/93.6; 424/93.7; 435/320.1; 435/455;
514/44(58) **Field of Search** 424/93.1, 93.2,
424/93.21, 93.6, 93.7; 435/320.1, 455;
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5,858,351 A 1/1999 Podsakoff et al. 424/93.2**FOREIGN PATENT DOCUMENTS**

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(List continued on next page.)

Primary Examiner—Anne-Marie Falk(74) **Attorney, Agent, or Firm—Hale and Dorr LLP**(57) **ABSTRACT**

A process for increasing the circulating levels of gene products in a primate for extended period of time is provided. In accordance with that process, muscle cells of the mammal are transformed with an expression vector that contains a polynucleotide that encodes the gene product and which vector drives expression in the muscle.

24 Claims, No Drawings